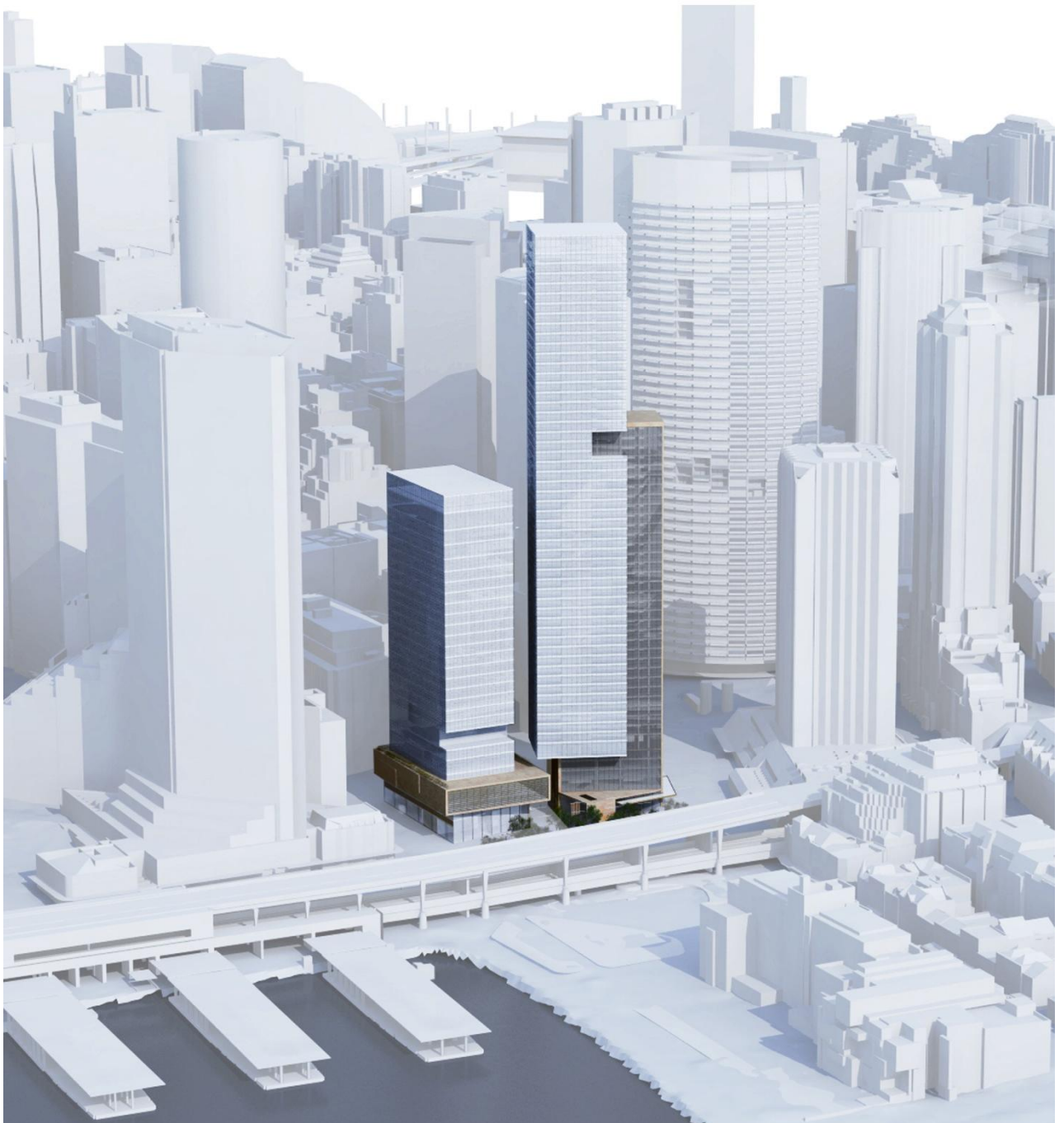


Building Services and Utility Report - Mech, Elec, Fire, Hyd & VT

Sydney One Project, Sydney



Building Services and Utility Report - Mech, Elec, Fire, Hyd & VT

Sydney One Project, Sydney

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Project Appreciation

Sydney One Project located at 1 Alfred St, 19-31 Pitt St and 31A Pitt St, Sydney consists of two towers.

- Tower A - Residential Tower consisting of 56 Levels with 184 Apartments.
- Tower B - Hotel Tower consisting of 24 Levels with 168 bedrooms

Tower A is an amended Stage 2 DA and Tower B is a Stage 1 DA intended for a Design Competition.

AECOM Australia P/L has been engaged to provide Consulting Services for Mechanical, Electrical, Fire, Hydraulic and Vertical Transportation Services.

In collaboration with Crone Partners Pty Ltd and Kerry Hill Architects Pty Ltd, this Brief consists of individual services concept methodologies accompanied with spatial information.

To facilitate coordination and transparency between Architects, a single consolidated Brief has been developed for both Towers. Future detailed design development phases will optimise spatial information considering both vertical and horizontal spatial and reticulation requirements. At this stage, spatial information is fluid and will be subject to design development to achieve the Client's brief.

This report has been compiled based on the BCA Assessment Report, dated 12th June 2015, prepared by City Plan Services Pty Ltd.

1.0 Mechanical Services

1.1 General

The Mechanical Services proposed for the mixed-used development, Sydney 1 Project, have been outlined including a description of the air conditioning system for the basement carpark, podium, hotel and residential apartments.

The systems shall be provided to suit the functional requirements of the spaces and to satisfy the relevant Building Codes, Australian Standards, and the Fire Engineered Solution.

Environmental sustainable initiatives have been considered in the selection of the environmental temperature control systems.

Centralised and separate mechanical systems shall be provided to serve each of the functional areas as follows.

1.1.1 Centralised Chiller Plant

The chiller plant shall comprise of two equally sized air cooled magnetic drive chillers and a low load chiller. The two main chillers shall be sized for 60% of the total peak cooling load. The chillers shall be located in the plantroom within the basement and provided with mechanical supply and exhaust systems.

The chiller plant shall serve the basement carpark, the podium levels of Building A and entire Building B.

A primary CHW flow and return loop shall be provided and reticulated from the basement through to Building A and Building B and associated duty and standby pumps

1.1.2 Centralised Heating Hot Water Plant

The heating hot water plant shall comprise of two (2) forced draft – gas fired condensing boilers and each sized for 60% of the total heading load. The boiler shall be located in the plantroom on the roof of Building B for flue discharge direct to atmosphere. The plantroom shall be fire segregated from the other plant

The heating hot water plant shall serve the basement carpark, the podium levels of Building A and entire Building B.

A primary HHW flow and return loop shall be provided and reticulated through to Building A and Building B including down to the basement with associated duty and standby pumps

1.1.3 Miscellaneous

- Air conditioning shall be provided to the Lift Motor Rooms by air cooled split type air conditioning units with remote condensers.
- Air conditioning shall be provided to the Main Electrical Switchroom by CHW FCUs along with mechanical supply and exhaust ventilation
- Air conditioning shall be provided to the Building Distributor Room by CHW FCUs along with mechanical supply ventilation.
- Air conditioning shall be provided to the Building Comms Room by CHW FCUs along with mechanical supply ventilation.

1.2 Tower A - Residential

1.2.1 Podium Retail

The building shall be served by a CHW and HHW system for the podium levels and individual standalone air cooled DX split type systems for the residential apartments.

- A common chilled water loop shall be provided to serve all tenancies with fan coil units provided by the retail tenants
- Common chilled water loop shall be provided to serve level 2 functional areas with air handling units located in the plantroom on level 6.
- Chilled water shall be provided from the central retail / hotel chiller plant (located in the basement) with separate thermal metering.
- Common kitchen exhaust system shall be provided to serve the retail tenancies and be treated with primary pollution control units. Discharge of the kitchen exhaust is at podium level 3m above the pedestrian walkway and 6m from the property boundary. The kitchen that serves the restaurant tenancy is currently nominated for the basement level 1.
- Mechanical exhaust system shall be provided to the toilets with discharge at roof level.
- A smoke control system is unlikely required for this building on the premise that the podium levels maintain fire compartments less than 2000m² (subject to BCA advisor ratification).
- Outdoor air to the retail tenancies shall be provided by facade louvers with connection by the retail tenants

1.2.2 Residential Apartments

The residential apartments shall be provided with dedicated multi split (variable refrigerant) DX systems to provide air conditioning to the rooms. The outdoor condensing units shall be located in individual plantrooms behind the fire stairs with louvers for intake and discharge. The rooms shall be provided with indoor ducted type ceiling fan coil units generally located in bulkheads. The height of the units and ductwork generally will be 300mm deep in order to fit into the ceiling space and for horizontal reticulation of ductwork. *(Concerns have been raised by the supplier Daikin in regards to condenser unit discharge across all the levels on the same facade one above the other. The issue here is that during summer, hot air discharge will rise, accumulate (hot air stack effect) and ultimately causing the units to fail on the higher levels as they are drawing in air at extremely high temperatures. It is proposed that a CFD study shall be carried out taking into account existing wind studies to ascertain the nature of the issue and subsequently provide certain mitigation measures as part of the detailed design development phase).*

- Each apartment shall be provided with toilet exhaust forming a centralised system with the fan located on the roof discharging to atmosphere 3m above roof level. An alternative option is to discharge on the southern face of the building on each floor subject to client approval.
- Each apartment shall be provided with laundry exhaust forming a combined centralised system with the toilet exhaust system and with the fan located on the roof discharging to atmosphere 3m above roof level. Alternative option is to discharge on the southern face of the building on each floor subject to client approval.
- Each apartment shall be provided with range hood exhaust forming a centralised system with the fan located on the roof discharging to atmosphere 3m above roof level.
- Mechanical supply ventilation shall be provided for the corridors to address stuffiness and odours.
- Trickle ventilation for the apartments integrated to the amenity exhaust ventilation system with various stages of operations as described in an alternate AECOM's Design Report dated 7th July 2010 for 1 Alfred St
- Garbage Shute exhaust ventilation shall be provided utilising the garbage shute riser as the exhaust riser.

1.2.3 Automatic Control System

A standalone direct digital control (DDC) system shall be provided for the building to monitor and control the air conditioning, ventilation systems, hydraulic systems and lighting systems. Each apartment will be provided with dedicated control panels interlocked to the propriety split system control system.

1.2.4 Smoke Hazard Management

1.2.4.1 General

The building smoke hazard management system shall operate in accordance with the requirements of the BCA consultant's requirements, relevant Standards and any Fire Engineered Solution. The podium will unlikely require smoke exhaust on the premise that the fire compartments are kept less than 2000m².

Separating construction shall be provided between the smoke zones. Motorised smoke dampers and fire dampers shall be provided as required, including control and power wiring and Fire Fan Control Panel (FFCP) switching and interface to the Fire Indicator Panel (FIP).

Smoke detectors shall be provided on the downstream side of supply air systems in accordance with AS1668.1 to shut down the mechanical plant upon fire indication with alarm to the building Fire Alarm System and the standalone control system. The smoke hazard management system shall be designed to instigate the following operation when smoke is detected in an area:

- Shut down of the apartment lobbies supplies supply system and spring closure of the motorised fire/smoke damper connecting the system to the relief air shaft. Opening of the stair pressurisation relief motorised fire/smoke damper.
- Immediate start of stair pressurisation fans and relief fan;
- Immediate shut down of the air-handling units in accordance with AS1668.2.
- Shut down of exhaust and supply fans in accordance with AS1668.2
- Carpark supply and exhaust ventilation shall continue running to provide smoke relief via the car park ventilation fans

1.2.5 Stair Pressurisation Plant

- A stair pressurisation system shall be provided for the building in accordance with code requirements. Fans shall be located on the podium level, mid-level of the residential tower and on the roof for each stairwell.
- Stair pressurisation relief air fans shall also be provided for each stairwell and located mid-level of the tower and on the roof.
- The fans shall be located in fire rated enclosures.

1.3 Tower B - Hotel

1.3.1 Basement Carpark

The basement shall house the central chilled water plantroom which shall provide CHW to both Building A and Building B.

- Mechanical supply and exhaust systems shall be provided to serve all basement carpark levels and the storage areas
- Mechanical exhaust system shall be provided to the Grease Arrestor Room
- Mechanical exhaust system shall be provided to the Garbage Room
- Mechanical supply and exhaust systems shall be provided to serve the Chiller Plantroom
- Chilled Water (CHW) and Heating Hot Water (HHW) fan coil units (FCU) shall provide air conditioning to the BOH staff areas and including hotel lobbies and residential lobbies.
- Mechanical ventilation shall be provided to the gas metering room.
- Mechanical supply and exhaust systems shall be provided to the Loading Dock
- Mechanical ventilation shall be provided for the BOH store rooms and equipment rooms
- Mechanical exhaust ventilation shall be provided to the entrance ramp
- Air intake at podium level and air discharge shall be provided at least 3m above pedestrian level. Exhaust discharge shall not be within 10m of air intakes or operable windows and adjacent property boundaries.

1.3.2 Podium Level

- Chilled water shall be provided from the shared retail / hotel chiller plant with separate thermal metering.
- A common chilled water loop shall be provided to serve all tenancies with fan coil units provided by the retail tenants.
- Air conditioning shall be provided to the Hotel Lobby and Lounges from ducted air handling units located in plantroom on level 2 mezzanine.
- Functional areas, Registered Club, Pre Function, Grand Ballroom, Gym/Yoga room, Executive Offices, Meeting Rooms and Ballroom Kitchen shall be air conditioned and served by dedicated CHW and HHW air handling plant located on the level 2 mezzanine plants. Outside air for the handling units shall be provided through louvres on the western façade.
- The indoor swimming pool area shall be provided with mechanical ventilation and dehumidification and space heating from ducted air handling unit located in the plantroom on level 2 mezzanines.
- Kitchens shall be provided with Pollution Control Units by the tenant and located at the back of the tenancies at high level complete with gantry access and platform. Discharge shall be through louvre above the entry of the tenancies, being 3m above the pedestrian walkway and 6m away from outside air intakes.
- The mechanical systems shall be operated and monitored via a Building Management System

1.3.2.1 Hotel Air conditioning and Ventilation

- Hotel rooms shall be provided with ducted air conditioning from chilled water and heating water fan coil units located in bulkheads
- Mechanical toilet exhaust shall be provided to hotel rooms and hotel amenities with discharge on the roof 3m above roof level.

1.3.2.2 Common Areas

Ground Level, Concierge Reception and Waiting Area Air conditioning to the Ground Level Concierge Reception and Waiting Area shall be provided by means of air handling units located in the plant spaces and with ducted air distribution and ceiling mounted linear diffusers. Outside air shall be introduced from the building facade via a weatherproof louvre. Return air shall be conveyed back to the air handling units via linear return air grilles and ceiling plenum.

The system shall be time switched via the BMS with remote monitoring at the BMS.

1.3.2.3 Apartment Lift Lobbies and Outdoor Air to the Apartments and commercial tenancies

A common system shall be provided to supply tempered air conditioning to the hotel lift corridors and outdoor air to the apartments and commercial tenancies. Tempered conditioned outdoor air shall be ducted to ceiling diffusers in the lift lobbies via the dedicated supply riser and the stair pressurisation relief shaft.

The tempered outdoor air provided to the lift lobbies shall also be supplied into the lobbies' ceiling plenum and then into the ceiling void of the apartments via a fire damper, motorised smoke damper, non-return air damper and acoustic transfer air duct. The outdoor air shall be drawn into the apartments by the fan coil units and toilet exhaust fans as make-up air. The acoustic transfer air duct shall be provided to satisfy the acoustic requirements of the apartments and commercial tenancies and to prevent cross noise propagation between apartments or commercial tenancies and the lobbies.

The air-handling unit shall be located in the roof plantroom on level 2 mezzanine plantroom. Outside air shall be introduced from the building facade via a weatherproof louvre.

The system shall be time switched via the BMS with remote monitoring at the BMS.

Motorised fire/smoke dampers shall be provided to isolate and connect the corridor Supply System and stair pressurisation relief fan to the common shaft. In fire mode operation, the Lobby Air Handling Unit shall not operate and shall be isolated from the stair pressurisation relief shaft via a motorised fire/smoke damper.

1.3.3 Automatic Control System

A standalone Building Management System (BMS) shall be provided for the building to monitor and control the air conditioning, ventilation systems, hydraulic systems and lighting systems. Each hotel room will be provided with dedicated control panels interlocked to the BMS for control of heating and cooling demands.

It assumed that specific individual standalone control will be provided for the following:

- Fire Alarm Initiation
- Hydraulics services
 - Cold water booster pumps (2 No.)
 - Hydrant pumps (2 No.)
 - Stormwater Sump pumps
 - Grease arrestor pumps
- Lighting control (timer or Photo electric)
 - Carpark levels - 2 stage lighting
 - External lights
 - Ground & Apartment Lobbies
 - Loading Dock areas

1.3.4 Smoke Hazard Management

1.3.4.1 General

The building smoke hazard management system shall operate in accordance with the requirements of the BCA consultant's requirements, relevant Standards and any Fire Engineered Solutions. The podium will unlikely require smoke exhaust on the premise that the fire compartments are kept less than 2000m².

Separating construction shall be provided between the smoke zones. Motorised smoke dampers and fire dampers shall be provided as required, including control and power wiring and Fire Fan Control Panel (FFCP) switching and interface to the Fire Indicator Panel (FIP).

Smoke detectors shall be provided on the downstream side of supply air systems in accordance with AS1668.1 to shut down the mechanical plant upon fire indication with alarm to the building Fire Alarm System and the Building Management System.

The smoke hazard management system shall be designed to instigate the following operation when smoke is detected in an area:

- Shut down of the apartment lobbies supplies supply system and spring closure of the motorised fire/smoke damper connecting the system to the relief air shaft. Opening of the stair pressurisation relief motorised fire/smoke damper.
- Immediate start of stair pressurisation fans and relief fan.
- Immediate start of smoke exhaust fans serving the fire-affected zone(s). The exhaust system serving any zone shall have capacity to exhaust at a rate that will cause an acceptable air velocity through doors that open into fire-affected zone.
- Immediate shut down of the air-handling units in accordance with AS1668.2;
- Shut down of exhaust and supply fans in accordance with AS1668.2.
- Carpark supply and exhaust ventilation shall continue running to provide smoke relief via the car park ventilation fans.

1.3.5 Stair Pressurisation Plant

- A stair pressurisation system shall be provided for the building in accordance with code requirements. Fans shall be located on the podium level, and on the roof for each stairwell.
- Stair pressurisation relief air fans shall also be provided for each stairwell and located on the roof.
- The fans shall be located in fire rated enclosures.

1.4 Spatial Requirements

1.4.1 Tower A - Residential

Note: The spatial requirements outlined are for coordination and to be developed and refined for the process of DA population. They are subject to change accordingly.

Mechanical HVAC System	Riser Size (m ²)	Plant Room Size	Comment
Basement			
Chiller Plant		Refer to building B	Basement level- part of central plant
Podium			
Lower Ground Plant Exhaust air ventilation	0.5m ²		Riser to run to louvre at Façade which is 3m above pedestrian and 6m away from air intakes or door openings
Lower Ground Plant Supply air ventilation	0.5m ²		Riser to run to louvre at Façade which is 3m above pedestrian and 6m away from air discharges or door openings
Podium Commercial and Residential Air Conditioning	SA – 2m ² RA – 2m ²	100m ²	Plantroom located adjacent to façade for air intake. S/A & R/A riser to run from plantroom to space
Restaurant Kitchen Exhaust	1.5m ²	Refer to building B	Basement to discharge at Podium level. Riser combined with Carpark exhaust riser however to be fire segregated
Toilet Exhaust	0.1m ²	4m ² at roof	Ground to roof -Plant are located adjacent to discharge - Discharge at Podium level – 10m away for operable windows, air intakes, doors and property boundary
Stair Pressurisation	1.8m ² per riser	8m ² per riser	Plant are located adjacent to air intake mid-level of tower and on the roof– Riser adjacent to each fire stair on every level served
Smoke Exhaust	NA	NA	Unlikely required on the premise that the podium level fire compartments are kept at less than 2000m ²
Chiller Pipework	0.3m ²		From basement level to level 2.
Heating Hot Water Pipework	0.3m ²		From basement level to level 2

Mechanical HVAC System	Riser Size (m ²)	Plant Room Size	Comment
Residential Tower			
Apartment Condenser Plant L5 to 35		4m2 min x 3m	On each level. Ventilation performance subject to CFD study
Apartment Condenser Plant L36 to 52		4m2 min x 3m	On each level. Ventilation performance subject to CFD study
Apartment Condenser Plant L36 to 52		4m2 min x 3m	On each level. Ventilation performance subject to CFD study
Apartment Toilet Exhaust Riser 1	0.5	4m ² at roof	Level 3 to Roof. Plant to be located adjacent to discharge point. Option to combine with laundry exhaust for horizontal discharge on each level on the southern façade.
Apartment Toilet Exhaust Riser 2	1.2	4m ² at roof	Level 3 to Roof. Plant to be located adjacent to discharge point. Option to combine with laundry exhaust for horizontal discharge on each level on the southern façade.
Apartment Toilet Exhaust Riser 3	1.3	4m ² at roof	Level 3 to Roof. Plant to be located adjacent to discharge point. Option to combine with laundry exhaust for horizontal discharge on each level on the southern façade.
Apartment Laundry Exhaust Riser 1	1	4m ² at roof	Level 3 to Roof. Plant to be located adjacent to discharge point. Option to combine with toilet exhaust for horizontal discharge on each level on the southern façade.
Apartment Laundry Exhaust Riser 2	1.4	4m ² at roof	Level 3 to Roof. Plant to be located adjacent to discharge point. Option to combine with toilet exhaust for horizontal discharge on each level on the southern façade.
Apartment Laundry Exhaust Riser 3	1.5	4m ² at roof	Level 3 to Roof. Plant to be located adjacent to discharge point. Option to combine with toilet exhaust for horizontal discharge on each level on the southern façade.
Apartment Hood Exhaust Riser 1	0.6	4m ² at roof	Level 3 to Roof. Plant to be located adjacent to discharge point
Apartment Hood Exhaust Riser 2	0.9	4m ² at roof	Level 3 to Roof. Plant to be located adjacent to discharge point
Apartment Hood Exhaust Riser 3	0.9	4m ² at roof	Level 3 to Roof. Plant to be located adjacent to discharge point
Corridor Supply Air Riser	0.15	4m ² at roof	Level 3 to Roof. Plant to be located adjacent to discharge point

Mechanical HVAC System	Riser Size (m ²)	Plant Room Size	Comment
Stair Pressurisation	1.8m ² per riser	8m ² per riser	Plant are located adjacent to air intake mid-level of tower and on the roof– Riser adjacent to each fire stair on every level served
Roof Top			
Ventilation Fan Plant		44m ² x 3m high	Roof Level
Stair Pressurisation Plant		8m ² x 3m high	3 off adjacent to stair pressurisation risers

1.5 Spatial Requirements

1.5.1 Tower B - Hotel

Note: The spatial requirements outlined are for coordination and to be developed and refined for the process of DA population. They are subject to change accordingly.

Mechanical HVAC System	Riser Size (m ²)	Plant Room Size	Comment
Basement			
Chiller Plant		170m ² x 4.5m high	Basement level with vehicle access for maintenance
Chiller Plantroom Exhaust	0.4m ²		Discharge at podium level 3m above pedestrian walkway and at 10m away from property boundary or on roof 3m above roof level.
Chiller Plantroom Supply	0.4m ²		Intake at podium level.
Carpark Exhaust	2m ² x2 off	50m ² x 2 off	Discharge at podium level 3m above pedestrian walkway and at 10m away from property boundary or on roof 3m above roof level.
Building A Restaurant Kitchen Exhaust	1.5m ²	9m ²	Basement to discharge at Podium level. Riser combined with Carpark exhaust riser however to be fire segregated
Carpark Supply	2m ² x2off	50m ² x 2off	Risers and plantroom opposite side of carpark to exhaust. Intake at podium level.
Loading Dock Exhaust	1.5m ²		Discharge at podium level 3m above pedestrian walkway and at 10m away from property boundary or on roof 3m above roof level.
Loading Dock Supply	1.5m ²		Intake at podium level
BOH Exhaust Ventilation	0.5m ²		Discharge at podium level 3m above pedestrian walkway and at 10m away from property boundary or on roof 3m above roof level.
BOH Supply Ventilation	0.5m ²		Intake at podium level
Garbage Room Exhaust	0.2m ²		Discharge at podium level 3m above pedestrian walkway and at 10m away from property boundary or on roof 3m above roof level.
Garbage Room Supply	0.2m ²		Intake at podium level

Mechanical HVAC System	Riser Size (m ²)	Plant Room Size	Comment
Kitchen exhaust for building A restaurant	1.5m ²	9m ² in basement	Basement to discharge at Podium level. Riser combined with Carpark exhaust riser however to be fire segregated

2.0 Electrical Services

2.1 Methodology

The site maximum demand for the two towers is approximately 3MVA accounting for 10% spare capacity and a diversity factor of 0.8. This is calculated based on industry standard VA/m² with approximately 1.4 MVA drawn by Tower A and approximately 1.6MVA drawn by Tower B. It is proposed that a new Ausgrid triplex substation of 3x1.5 MVA transformers shall be provided and installed on Basement Level 1 of Tower B to convert the Ausgrid 11kV incoming voltage to 400V and power to the two towers. In addition to three 1.5MVA transformers, the substation shall house HV switchgear and the LV switchboard. The LV switchboard of the triplex substation shall have two separate busbars each rated at 3000A.

Two main switchrooms shall be provided; one for each tower. These rooms shall have two forms of egress, and be located on Basement Level 1, close to the substation and in a central location of each respective tower. Dedicated risers/cable trays are required to reticulate the LV consumer-mains from the substation to the main switchboards.

A generator room shall be located in close proximity to each main switchroom and will contain a stand-by diesel generator plus control gear to provide BCA-required standby power in a mains failure situation. Risers will be required for intake and exhaust air and both the generator rooms and risers shall require acoustic treatment. It is proposed for the bulk fuel storage tanks to be located adjacent to the generator rooms on one of the lower basement levels.

A Building Distributor Room (BDR) is required on ground floor (or lower ground floor) of both Tower A and Tower B for incoming Telecommunication Carrier lead-ins, which will be distributed from the BDR to the Floor Distributors (FD) via diverse dedicated communications risers. In addition, each BDR will require diverse conduit paths for the incoming communications supply from the street to the towers.

It is recommended that a distributed antenna system (DAS) is installed in Tower A and B of 1 Alfred Street to provide adequate wireless coverage throughout the buildings. This will enable each tower to have full mobile coverage throughout the building. The coverage may be used for data and voice applications with the prevalence of remote or wireless data now a mainstream networking tool.

A security/BMS room is required on the ground floor of each tower for building management and monitoring. This room shall house head-end equipment for BMS, surveillance, access control, and intruder detection. An associated security riser is required for all floors of each building which ties back to this room.

Tower B shall require an AV room to house AV equipment used for various functions hosted in the Registered Club, Speciality Restaurant, Ballroom, Bar and Club.

2.2 Tower A – Residential

The Residential Tower incorporates the following:

- All above ground services and residential tower services

Below ground floor, including basement floor levels and the Residential Tower services plant requirements form part of the Stage 1 DA. These are not considered for Tower A.

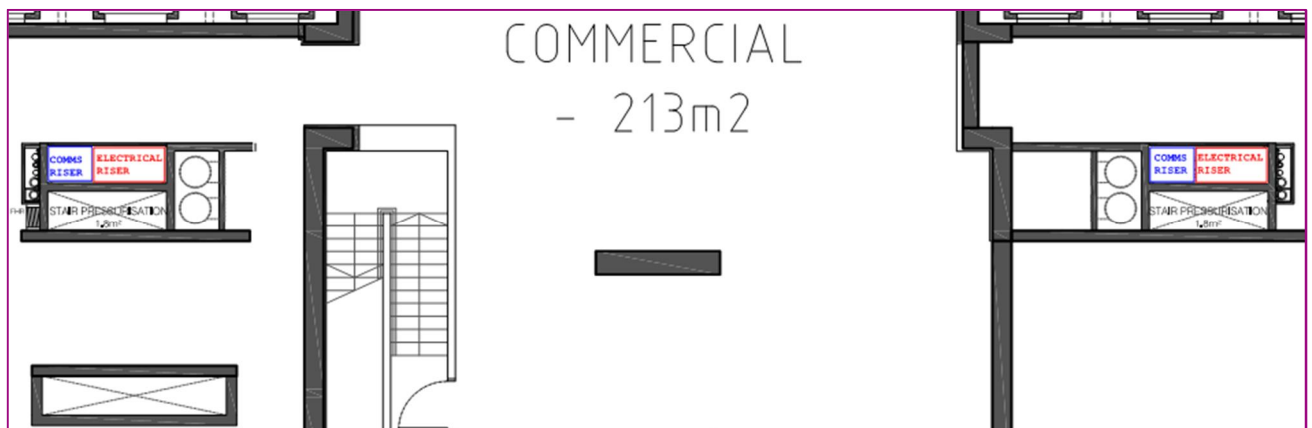
2.2.1 Residential Basement Spatial Requirements

Refer spatial advice for Tower B - Hotel

2.2.2 Residential Spatial Requirements

Item	Location	Area	Comment
Security/BMS Room A	Ground Floor	5m Long X 4m Wide X 3m High	Ground Floor Tower A
Electrical/Comms Riser A1	Each level	2.3m X 1m	Separation barrier required between the Electrical & the Comms services. Separate access required to each section of service riser. Diverse riser from Electrical/Comms Riser A2. Floor distribution boards housed in riser cupboard on various levels.
Electrical/Comms Riser A2	Each level	2.3m X 1m	Separation barrier required between the Electrical & the Comms services. Separate access required to each section of service riser. Diverse riser from Electrical/Comms Riser A1. Floor distribution boards housed in riser cupboard on various levels.
Diesel Pipework Riser A	Refer to Comments	1.5m X 1m	Diesel pipework riser is not required where the bulk fuel storage tank is located on the same level and adjacent to the generator room

2.2.3 Tower A Riser Configuration

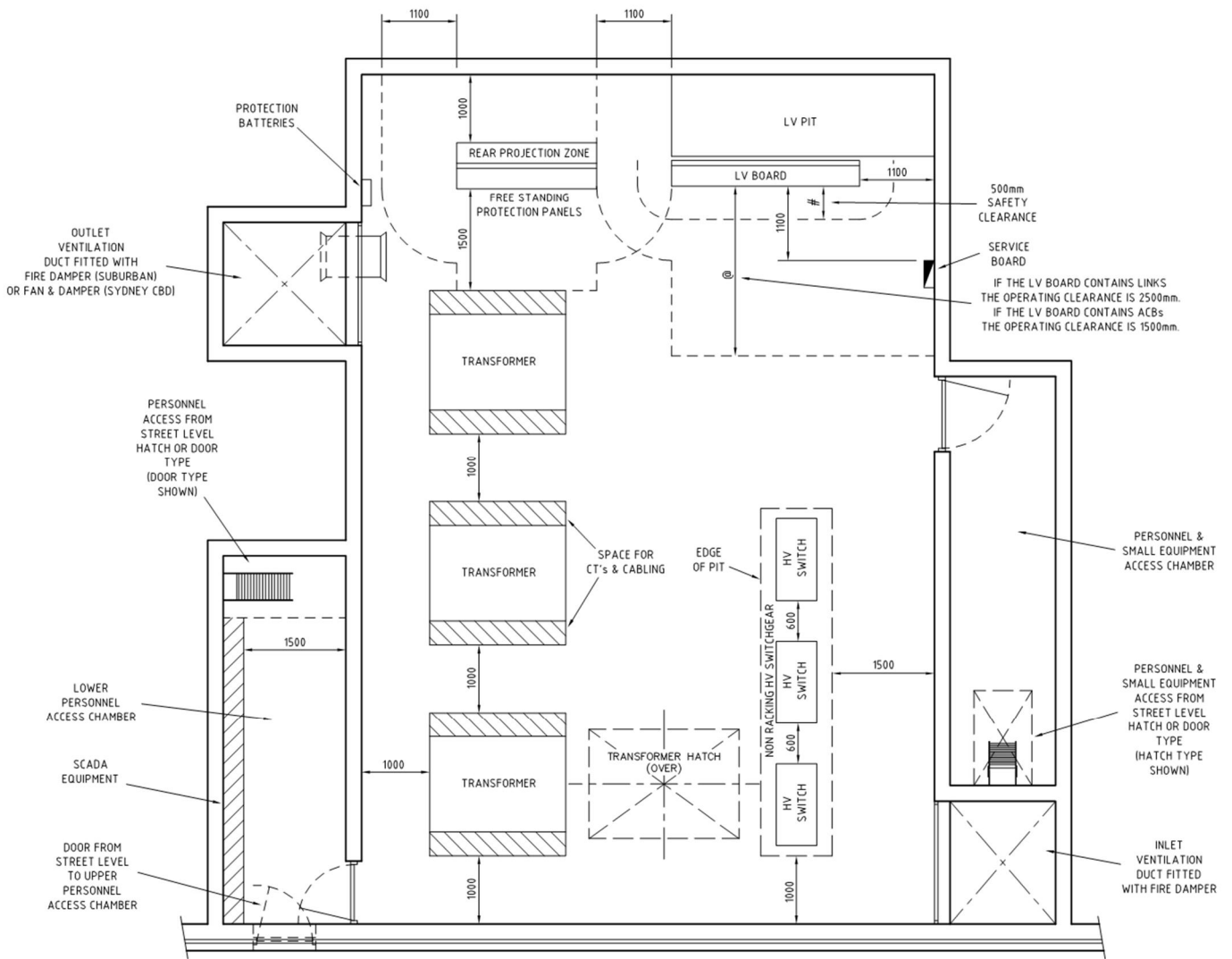


2.3 Tower B – Hotel

2.3.1 Hotel Spatial Requirements

Item	Location	Area	Comment
Substation			<p>4.5 MVA firm rating comprising of 3x1.5MVA transformers</p> <p>General Access Requirements:</p> <p>Ausgrid personnel must have 24 hour access seven days a week through dedicated access ways which must be at least 1200 mm wide and 2400mm high</p> <p>No public or occupant access must be through the Ausgrid dedicated access ways.</p> <p>All access ways must be located to ensure egress and ingress from or onto a public street or an all-weather heavy-duty access roadway which complies with the BCA egress and ingress requirements.</p>
Substation Basement Chamber	Basement	<p>15m Long X 10m Wide X 4.5m High = ~150 m²</p> <p>+</p> <p>2 X 4m²</p> <p>+</p> <p>2 X 15 m²</p>	<p>2 X 4m² ducts required for inlet and outlet ventilation</p> <p>2 X 15 m² personnel access stairways</p> <p>Personnel Access Requirements</p> <p>Two separate dedicated means of access from an access roadway. To be approved by Ausgrid.</p> <p>Ausgrid Preferred Option: Each access way is through a separate doorway which is located at street level in an external wall of the building. Each door opens into an access chamber which leads to a descending stairway. At the foot of the stairway is another access chamber containing the doorway into the substation chamber.</p> <p>Transformer Access Requirements</p> <p>Transformer hatch must be in an unenclosed area accessible from the street with 24 hour seven day a week access by Ausgrid personnel.</p> <p>Transformer hatch and equipment handling area should be directly above the substation chamber.</p> <p>This is the preferred approach electrically. See Figure 1</p>

Figure 1: Preferred Substation Configuration



Item	Location	Area	Comment
Main Switchroom A	Basement Level One In Close Proximity to substation In a central location for Tower A	10m Long X 8m Wide X 3m High	2 Forms of egress, one with a double door
Main Switchroom B	Basement Level One In Close Proximity to substation In a central location for Tower B	10m Long X 8m Wide X 3m High	2 Forms of egress, one with a double door
Generator Room A	Basement Level 2	12m Long X 10m Wide X 3.5m High	Ideally located in close proximity to Main Switchroom A
Diesel Storage Tank A	Basement Level 2	7,500 L Tank 7m Long X 5m Wide X 3m High	Ideally located in close proximity to Generator Room A
Generator Room B	Basement Level 2	12m Long X 10m Wide X 3.5m High	Ideally located in close proximity to Main Switchroom B
Diesel Storage Tank B	Basement Level 2	7,500 L Tank 7m Long X 5m Wide X 3m High	Ideally located in close proximity to Generator Room B
Building Distributor Room A	Lower Ground Floor	8m Long X 5m Wide X 3m High	In a central area of Tower A
Building Distributor Room B	Basement Level 1	8m Long X 5m Wide X 3m High	In a central area of Tower B
Comms Room B	Every 2 nd Level	3m Long X 3m Wide X 3m High	Ground Floor and above. Can be every second Floor Level
Security/BMS Room B	Ground Floor	5m Long X 4m Wide X 3m High	Ground Floor Tower B. Can be located in the Basement
AV Control Room	Level 2	6m Long X 5m Wide X 3m High	Level 1 or Level 2 of Tower B

Item	Location	Area	Comment
Electrical Riser B1	Each level	2.5m X 1m	Located near Main Switchroom B. Diverse from Electrical Riser B2 for floor distribution. Floor distribution board housed in riser cupboard on various levels.
Electrical Riser B2	Each level	2.5m X 1m	Located near Main Switchroom B. Diverse from Electrical Riser B1 for floor distribution. Floor distribution board housed in riser cupboard on various levels.
Comms Riser B1	Each level	1.5m X 1m	Ground Floor and above.
Comms Riser B2	Each level	1.5m X 1m	Ground Floor and above.
Diesel Pipework Riser B	Refer to Comments	1.5m X 1m	Diesel pipework riser is not required where the bulk fuel storage tank is located on the same level and adjacent to the generator room
Cogeneration Plant	Basement	10m X 10m	Indicative spatial

2.4 Ausgrid

Evidence is provided below of our application to commence initial communication with Ausgrid. Ausgrid will require a Level 3 Designer to develop the design.

From: Alison Inkpen [<mailto:ainkpen@ausgrid.com.au>] On Behalf Of DataNorth
Sent: Wednesday, 17 June 2015 3:35 PM
To: Waldron, Aileen
Subject: 1 ALFRED ST SYDNEY 2000 NSW

Dear Connection Applicant

Premise Address:	1 ALFRED ST SYDNEY 2000 NSW
Reference Number: AP	800080420
Reference Number: MC	1900055189

We have received your "Connection Application" relating to the above mentioned address and have forwarded the application to our Contestability Section for consideration and approval. If you have any questions regarding approval, the Contestability Section may be contacted on –

Phone: 1800 051 017
or
(02) 9585 5761 and (02) 9585 5609 (Sydney South)
(02) 9663 9514 and (02) 9663 9517 (Sydney East)

Please allow at least 10 working days for the application to be initially processed.

Installation Data - Central Coast
Phone: 02-43998000
Fax: 1300 662 089
Email: datanorth@ausgrid.com.au

This e-mail may contain confidential or privileged information.
If you have received it in error, please notify the sender immediately via return e-mail and then delete the original e-mail.
If you are the intended recipient, please note the change of sender email address to @ausgrid.com.au.

Ausgrid has collected your business contact details for dealing with you in your business capacity. More information about how we handle your personal information, including your right of access is contained at <http://www.ausgrid.com.au/>

2.5 NBN

Evidence is provided below of AECOM's initial communication with NBN for application of telecommunications services to Tower A and B. Two separate applications have been submitted for the site, so that each tower may have diverse incoming telecommunications supplies.

2.5.1 Tower A

From:	developerliaison@nbnco.com.au
Sent:	Thursday, 18 June 2015 11:24 AM
To:	Magee, Adam; Waldron, Aileen
Subject:	NBN Co: Development Registration received for Sydney One Project - Tower A - AYCA-29AED5
Attachments:	AYCA-29AED5.pdf

Development reference: **AYCA-29AED5**
Your development: **Sydney One Project - Tower A**
Your internal reference: **Tower A - Residential Tower**

Dear Adam Magee,

Thank you for your registration for Sydney One Project - Tower A.

Your unique development reference is **AYCA-29AED5**. Please retain your development reference as it will be required to complete the online Stage Application Form for each Stage of your Development.

Please ensure you apply for each stage, at least 3 months prior to the commencement of civil works for each stage.

A member of our Developer Liaison Team will assess your Development Registration and Stage application. Please allow 20 business days for your application to be processed.

If you have any questions, please call us on **1800 687 626** or email DeveloperLiaison@nbnco.com.au

Thank you and regards,
NBN Co Developer Liaison Team

2.5.2 Tower B

From: developerliaison@nbnc.com.au
Sent: Thursday, 18 June 2015 12:05 PM
To: Magee, Adam; Waldron, Aileen
Subject: NBN Co: Development Registration received for Sydney One Project - Tower B - AYCA-29AKWY
Attachments: AYCA-29AKWY.pdf

Development reference: **AYCA-29AKWY**

Your development: **Sydney One Project - Tower B**

Dear Adam Magee,

Thank you for your registration for Sydney One Project - Tower B.

Your unique development reference is **AYCA-29AKWY**. Please retain your development reference as it will be required to complete the online Stage Application Form for each Stage of your Development.

Please ensure you apply for each stage, at least 3 months prior to the commencement of civil works for each stage.

A member of our Developer Liaison Team will assess your Development Registration and Stage application. Please allow 20 business days for your application to be processed.

If you have any questions, please call us on **1800 687 626** or email DeveloperLiaison@nbnc.com.au

Thank you and regards,

NBN Co Developer Liaison Team

2.6 Telstra

Evidence is provided below of AECOM's initial communication with Telstra for application of telecommunications services to Tower A and B. Once more, two separate applications have been submitted for the site, so that each tower may have separate incoming telecommunication supplies.

2.6.1 Tower A

From: registration@telstrasmartcommunity.com
Sent: Thursday, 18 June 2015 12:55 PM
To: Waldron, Aileen
Subject: Application for Reticulation Confirmation - Sydney One - Tower A Stage 1 - Sydney 2000
Attachments: terms_buildings.html; 17356373.txt

THANKS FOR YOUR APPLICATION SUBMISSION
HERE ARE THE DETAILS

Hi Aileen Waldron,

Thanks for submitting your Application for Reticulation (AFR) on the Telstra Smart Community website for your development.

IMPORTANT NOTE

The construction of Telstra's network dates back over many years. Some of Telstra's pits and ducts were manufactured from asbestos-containing cement. You must take care in conducting any works in the vicinity of Telstra's pits and ducts. You must refrain from in any way disturbing and damaging Telstra's network infrastructure when conducting your works. We recommend that before you conduct any works in the vicinity of Telstra infrastructure that you ensure your processes and procedures eliminate any possibility of disturbing, damaging or interfering in any way with Telstra's infrastructure. Your processes and procedures should incorporate measures having regard to the nature of this risk.

Your AFR number is: 17356373. You can use it and your password to view, change or add details at any stage of your development.

Attached are the details provided with your application, which you might want to keep handy. They can also be viewed on the Telstra Smart Community website at

<http://www.telstra.com.au/smartcommunity/developers.html>

The details of the files attached with this development are as follows:

File Name, File Type, File Size

1: Wanda - Sydney One - Site Overview.pdf, Adobe PDF files, 138.6Kb

2: Tower A Plans - LG To L57.pdf, Adobe PDF files, 2.8Mb

3: Tower B Plans - B6 To G.pdf, Adobe PDF files, 3.7Mb

2.6.2 Tower B

From: registration@telstrasmartcommunity.com
Sent: Thursday, 18 June 2015 1:11 PM
To: Waldron, Aileen
Subject: Application for Reticulation Confirmation - Sydney One - Tower B Stage 1 - Sydney 2000
Attachments: terms_buildings.html; 17356375.txt

THANKS FOR YOUR APPLICATION SUBMISSION
HERE ARE THE DETAILS

Hi Aileen Waldron,

Thanks for submitting your Application for Reticulation (AFR) on the Telstra Smart Community website for your development.

IMPORTANT NOTE

The construction of Telstra's network dates back over many years. Some of Telstra's pits and ducts were manufactured from asbestos-containing cement. You must take care in conducting any works in the vicinity of Telstra's pits and ducts. You must refrain from in any way disturbing and damaging Telstra's network infrastructure when conducting your works. We recommend that before you conduct any works in the vicinity of Telstra infrastructure that you ensure your processes and procedures eliminate any possibility of disturbing, damaging or interfering in any way with Telstra's infrastructure. Your processes and procedures should incorporate measures having regard to the nature of this risk.

Your AFR number is: 17356375. You can use it and your password to view, change or add details at any stage of your development.

Attached are the details provided with your application, which you might want to keep handy. They can also be viewed on the Telstra Smart Community website at <http://www.telstra.com.au/smartcommunity/developers.html>

The details of the files attached with this development are as follows:

File Name, File Type, File Size

- 1: Tower B Plans - B6 To L25 - Part 1.pdf,Adobe PDF files,4.1Mb
- 2: Tower B Plans - B6 To L25 - Part 2.pdf,Adobe PDF files,3.8Mb
- 3: Wanda - Sydney One - Site Overview.pdf,Adobe PDF files,138.6Kb

Fire Services

2.7 Methodology

General

The following fire services are required to the building, which is greater than 50 m in effective height, in accordance with BCA 2015, proposed Fire Engineering Report and relevant Australian Standards:

- A combined sprinkler and hydrant system, in accordance with BCA E1.5, AS 2118.6-2012, AS2118.1-1999 and AS 2419.1-2005.
- Automatic Fire Detection and Alarm System in accordance with BCA Table E2.2a, Spec E2.2a Clauses 2, 3 and 4, AS 1668.1, AS 1670.1 and AS 3786.
- Sound System and Intercommunication System for Emergency Purposes (SSISEP) to BCA E4.9 and AS 1670.4.
- Portable Fire Extinguishers in accordance with BCA E1.6 and AS 2444.

For BCA purposes both buildings shall be treated as one building, therefore fire services systems shall not be split per tower. The fire services system infrastructure shall serve both Residential and Hotel buildings.

2.8 Combined Sprinkler and Hydrant System

2.8.1 General

A Combined Fire Sprinkler and Hydrant System shall be provided throughout the entire building in accordance with the accordance with BCA E1.5, AS 2118.6-2012, AS2118.1-1999 and AS 2419.1-2005.

The system is to include but not be limited to the following;

- Connection to the incoming town main connection for the combined sprinkler and hydrant systems primary water supply.
- On site combined sprinkler and hydrant water supply tank secondary supply, effective capacity to be 80,000 L. If sprinkler drenchers are required or there is storage present that increase the hazard class from ordinary hazard to high hazard the tank capacity would have to be increased to a size dependant on the type of storage and height of storage present.
- Electric Booster Pump and all associated equipment
- Diesel Booster Pump and all associated equipment
- Diesel Relay Pumps and all associated equipment
- Fast Response sprinklers throughout
- Sprinkler drenchers if required, subject to BCA report and Fire Engineering Report
- Sprinkler spares cabinet
- Sprinkler Control Assemblies
- Pressure Reducing Valves
- Flow Switches
- Combined Sprinkler and Hydrant Fire Brigade Booster Arrangement and all associated equipment
- Jockey Pump for pressure maintenance
- Remote test valves
- Internal hydrants
- Pipework and associated valves, equipment, fittings and fixings
- Pressure Switches
- Pressure Gauges

- Fire Brigade Alarm Line
- Monitoring and Controls, including isolation valve monitoring
- Wiring
- Combined Sprinkler and Hydrant Block plans
- Locks and straps
- Water Supply Proving Test Arrangements
- Fire water tank and associated equipment

2.8.2 Water Supply

The fire services water supply will be a Grade 1 water supply. The primary supply will consist of a new 150mm towns main connection onto the existing towns main, complete with back flow prevention arrangement. The primary supply will be boosted by a single electric booster pump. The secondary supply will consist of an on-site combined sprinkler and hydrant water supply tank, effective capacity to be 80,000 L, this is the minimum allowed capacity, the capacity may have to increase if sprinkler drenchers are required or the hazard classification for storage/loading dock areas increases to high hazard. The secondary supply will be boosted by a diesel booster pump.

The Fire Brigade Combined Sprinkler and Hydrant booster connection will be located within an accessible and visible booster enclosure located at the main entrance to the building.

Manually operated diesel relay booster pumps will be provided for fire brigade use in order to boost the upper pressure zone of the combined sprinkler and hydrant system.

NOTE: It is assumed that the town main will be able to provide sufficient flow, and required pressure to the primary booster pump, to serve as the primary water supply. If unable, then two fixed on-site water storage tanks will be required. Subject to the results from the water pressure enquiry.

2.8.3 Design Criteria

The design criteria for the sprinkler system will be as follows:

Occupancy	Hazard Class	Discharge Density mm/min	Assumed Operation Area
Office, administration	Light Hazard	2.3	6 heads x 48 L/Min min.
Restaurants and cafes	OH1	5	72m ²
Plant	OH1	5	72m ²
Hotel	Light Hazard	To data sheet	4 heads
Residential	Light Hazard	To data sheet	4 heads
Car park	OH2	5	144m ²
Retail	OH3	5	216m ²
Loading dock and storage areas (subject to storage details)	OH3	5	216m ²

For the Hydrants the following design criteria shall apply:

Building classification:	All classes
No. of hydrants to operate simultaneously:	2
Minimum flow rate:	20 L/s total at the two most hydraulically disadvantaged hydrants (10 L/s each)
Minimum outlet pressure each hydrant outlet non-boosted:	700 kPa @ 10 L/s for each hydrant
Minimum outlet pressure when boosted:	700 kPa

2.8.4 Wet Sprinkler Control Assemblies

Sprinkler control assemblies shall be located at each storey, in each building, within both Site 1 and Site 2, in a common fire rated exit in accordance with AS 2118.6.

Include in the sprinkler control valve assembly and associated components everything necessary for the function of the system in accordance with AS 4118.1.2 and at least the following:

- Main Stop Valve: 0.S & Y type or butterfly valve, with flange or roll grooved connection, hand wheel, right handed
- Check Valve: Flanged or roll grooved connection, installed immediately above each main stop valve. Mount approximately 1400 mm above the floor level
- Connection to fire trip direct Local Fire Brigade alarm and pumps
- Flow switch and solenoid valve arrangement with system test drain
- Installation pressure gauges
- Block plan
- Emergency instructions
- A location plate
- A notice above the main stop valve identifying the installation and the area served by the installation

2.8.5 Fire Main Reticulation

Piping to which sprinkler installations and fire hydrants are directly connected to shall be from a 150mm ring main with multiple pressure zones.

Vertical portions of the ring main pipes shall be located within separate fire isolated stairs within each building.

2.8.6 Isolation Valve Criteria

The pressure zone shall incorporate isolation valves so that not less than 75% of fire hydrants in that zone and not less than 50% of fire hydrants at each floor level, within each building, remain operable upon isolation of any section of the fire ring main.

Isolation valves shall also be located such that not more than four storeys of sprinklers can be isolated.

In addition isolation valves shall be located as follows;

- On each arm of the ring main, adjacent to the connection with the supply pipe.
- On branches into buildings/towers, adjacent to the tapping in the ring main, in a position considered to be accessible under fire conditions.
- On branches supplying more than one fire hydrant, adjacent to the tapping in the ring main.
- On branches supplying a sub-ring main, adjacent to the tapping in the ring main.
- On the ring main, remote from the source of supply.
- On any interconnection within the ring main, on the cross-connecting pipe adjacent to the ring main, and on the ring main on each side of the cross connecting pipe.
- On ring mains supplied by separate sources, isolating valves shall be located at the point of connection with each source.

All ring main isolating valves shall be so located as to permit ready access by fire brigade personnel.

2.8.7 Pressure Reducing Valves

Pressure reducing valves are to be provided in accordance with AS 4118.1.8 and the manufacturer's specific installation requirements. They shall be provided to prevent the total maximum static pressure in the system exceeding 1200 kPa at any sprinkler head or 1300 kPa at any fire hydrant. Isolation valves are to be provided either side of the pressure reducing valve for maintenance purposes. There shall be one pressure reducing valve on each rising ring main so that the combined sprinkler and hydrant system consists of two pressure zones, upper and lower. The pressure reducing valves shall be located in the fire stairs.

2.8.8 Flow Switches

Flow Switch Zoning shall align with fire detection and zone smoke control zones where practical and fitted with flow switch and test facilities drain to the stormwater tank or to a sump / pump out pit provided by the hydraulic trade.

Supply and install on the main sprinkler branches to each floor, downstream of the floor level main stop valve, a flow switch in an accessible location.

Flow switches are to be single pole, magnetic switch or paddle type, low restriction on/off type. Sensitivity to suit minimum flow, with pneumatic retard or time delay.

Each flow switch shall be wired back to the Fire Indicator Panel on separate alarm zone facilities in accordance with AS 1670.1.

A solenoid operated water flow test drain shall be fitted on the system side of each flow switch fitted with a solenoid test valve in an accessible position. Each valve shall be labelled "Flow Switch Test Drain Level" and wired back to the fire indicator panel to enable testing to be carried out.

The test drains shall be sized for the water flow necessary to operate the flow switch but less than the flow from a single activated sprinkler.

2.8.9 Water Saving Initiatives

It is our understanding that no water saving initiatives is compulsory for this building.

2.9 Automatic Fire Detection and Alarm System

2.9.1 General

A Fire Detection System and Alarm system is required in accordance with BCA Table E2.2a, Spec E2.2a Clauses 2, 3 and 4, AS 1668.1, AS 1670.1 and AS 3786.

The system shall be an automatic fully addressable fire detection and alarm system that is controlled and monitored by a Fire Indicator Panel (FIP) located in the Fire Control Room.

A mimic panel complete with block plan, indicating location of FIP, and a red manual call point shall be provided in the lobby of the main entrance to the building.

Detectors will be selected and positioned to suit the risk and to mitigate the possibility of false alarms.

Smoke alarms shall be provided within the soul occupancy units (residential apartments) in accordance with AS 3786 and shall be powered from the consumer main source. Smoke alarms within each unit shall be interconnected so that the operation of one smoke alarm shall activate all smoke alarms within that unit only. Smoke alarms are to be provided by the electrical trade accordingly.

Detectors shall be provided within the Hotel Rooms in accordance with BCA Spec E2.2a clause 3. (c) (i).

The Automatic Detection and Alarm System will be interconnected with the BMS, combined sprinkler and hydrant system, Sound Systems and Intercom Systems for Emergency Purposes (SSISEP).

The FIP will incorporate a Fire Fan Control Panel (FFCP) that will automatically and manually control the ventilation and air distribution systems throughout the entire site for the control of smoke in accordance with AS 1668. Duct mounted smoke detectors shall be provided downstream of all supply air fans that continue to operate in fire mode in order to shut down the fan upon activation of the duct mounted smoke detector.

The FIP will consist of Alarm Signalling Equipment (ASE) for automatic notification of a fire alarm to the Fire Brigade via a third party monitoring provider upon activation of a sprinkler head or fire detector. Manual activation of the ASE shall be achieved via activation of the manual call point incorporated in the FIP and mimic panel.

An option for a fully Automatic Detection and Alarm System Colour Graphics Display shall be provided to improve the response time and operational procedures of facilities management, security and the Fire Brigade upon the activation of a fire alarm. This system would also assist facilities management in the day to day maintenance, monitoring and control of the Automatic Detection and Alarm System. The Graphics Display shall consist of a computer screen and hardware in the 24/7 facilities management room or security room, it shall provide a detailed graphical display of any fire alarm and an indication of how to get to the device in alarm. An itemised price shall be provided for this Graphics Display.

The fire panels will be provided with a minimum of 20% spare capacity.

2.10 Sound System & Intercom System for Emergency Purposes (SSISEP)

2.10.1 General

A SSISEP shall be provided throughout the entire building in accordance with the BCA E4.9, AS 1670.4 and the Fire Engineering Report.

The system shall be controlled and monitored by a Master Evacuation Control Panel (MECP) located in the Fire Control Room, directly adjacent to the MFIP.

The SSISEP will be automatically initiated by the activation of a sprinkler head and/or detector via the Automatic Detection and Alarm System. Manual actuation will be achieved via white emergency call points (ECP) located within each evacuation zone and the red manual call points (MCP) incorporated in the FIP and mimic panel.

Speakers will be selected and located to ensure the required speech intelligibility and sound pressure is delivered to all occupied areas. A sound pressure level of at least 75 dB will be achieved at all bed heads in order to arouse sleeping occupants. In areas where speech intelligibility performance cannot be achieved due to the layout constraints of the occupancy an alternative solution will be carried out e.g. carpark, loading dock areas, plant areas.

Warden Intercom Points (WIP's) will be provided per evacuation zone.

The SSISEP will allow controlled evacuation of the facilities during a fire, including zoned and cascading evacuation.

Additional visual warning devices shall be provided in areas where the sound pressure level of the background noise is higher than 95 dB.

The SSISEP panels will be provided with a minimum of 20% spare capacity.

2.11 Portable Fire Extinguishers

2.11.1 General

Portable fire extinguishers are to be provided throughout the development to comply with BCA table E1.6 and selected, located and distributed in accordance with sections 1 to 4 of AS 2444.

All extinguishers shall be complete with appropriate mounting boards, mounting brackets, nozzles, hoses, operation instructions and location signs.

2.11.2 Selection and Location

Risk	Equipment Type and Rating	Preferred Location
Essential Service Switchboards	4.5 kg Dry Chemical Powder (4A 60B:(E)) or Carbon Dioxide 5 kg (5B(E))	Between 2m and 20m from essential service switchboards.
Electrical Switch Rooms	4.5 kg Dry Chemical Powder (4A 60B:(E)) or Carbon Dioxide 5 kg (5B(E))	Adjacent to and internal side of entry door between 2m and 5m maximum.
Plant Rooms	4.5 kg Dry Chemical Powder (4A 60B:(E)) or Carbon Dioxide 5 kg (5B(E))	Adjacent to and internal side of entry door between 2m and 5m maximum.
Sole Occupancy Units (Residential Apartments) and Hotel Rooms	4.5kg Dry Chemical Powder (4A 60B:(E))	So that travel distance from the entrance doorway of any sole occupancy unit to the nearest fire extinguisher is not more than 10 m

2.12 Interfaces with other systems

Operation of the building services in fire mode requires interfaces with other services. Interfaces will be provided between the fire detection system and the following building services:

- Mechanical ventilation used for smoke hazard management
- General air conditioning systems
- Building management systems
- Security and access control devices
- Automatic door operators

2.13 Testing, commissioning and maintenance

All fire safety systems will be inspected and tested as required during and upon completion, including full functional testing of each installed system.

2.14 Fire Control Room

A fire control room is required, as the building is greater than 50 m in effective height, in accordance with BCA E1.8 and spec E1.8

2.15 Tower A – Residential

2.15.1 Residential Spatial Requirements

Fire Services	Riser Size	Room Size	Comments
Fire sprinkler and hydrant fire brigade booster valve assembly (Ground Floor of Tower A - shared/common)		3m x 0.6m x 1.8m H	Ground floor along frontage, visible from main entrance and accessible by fire appliance & personnel. Must be at least 10m from the building or fire separated from the building, FRL 90/90/90 for a distance of at least 2m each side of and 3m above the upper hose connections. Also it cannot be within 10m of a substation or gas meter. Direct access by fire appliance & personnel, final location to be determined. Sprinkler and hydrant backflow prevention valves to be installed in cupboard by hydraulic trade.
Fire Sprinkler / Hydrant system risers and associated equipment	2m x 0.3m x 2mH		All floors within fire stairs. Space required for 150mm ring main, sprinkler control valve assembly, 150mm risers to upper pressure zone (3 off), pressure reduction stations, hydrant landing valve and fire electrical riser. Allowance for 1.0m free zone for path of egress within fire stair. 100mm clearance required around hydrant point valve hand wheel. Supplementary on floor hydrant points may be required to provide complete coverage.
Fire Control Room (Shared/common)			Located in Tower B. Refer Tower B spatial information.
Portable Fire Extinguisher Cabinet - Tower A		0.28mW x 0.205mD x 0.56mH	So that travel distance from the entrance doorway of any sole occupancy unit or hotel room to the nearest fire extinguisher is not more than 10 m. Exact dimensions depend on manufacturer of cabinet, detailed co-ordination required with fire trade.
Fire Hose Reel and Portable Fire extinguisher Enclosure		0.9mW x 0.50mD x 2.4mH	To serve entire Tower building except for the class 2 (Residential) portions of the building. Locate within 4m of a fire exit stair or required exit. Supplementary on floor enclosures may be required to provide complete coverage.

2.16 Tower B – Hotel

2.16.1 Hotel Spatial Requirements

Fire Services	Riser Size	Room Size	Comments
Fire sprinkler and hydrant fire brigade booster valve assembly (Ground Floor of Tower A - shared/common)			Located in Tower A. Refer Tower A spatial information.
Fire Sprinkler / Hydrant system risers and associated equipment	2m x 0.3m x 2mH		All floors within fire stairs. Space required for 150mm ring main, sprinkler control valve assembly, 150mm risers to upper pressure zone (3 off), pressure reduction stations, hydrant landing valve and fire electrical riser. Allowance for 1.0m free zone for path of egress within fire stair. 100mm clearance required around hydrant point valve hand wheel. Supplementary on floor hydrant points may be required to provide complete coverage.
Fire Control Room (Ground Floor) (Shared/common)		4m x 2.5m x 2.5m H	Will house Fire Indicator Panel (FIP), Master Evacuation Control Panel (MECP), Fire Fan Control Panel and other associated equipment. The room must be located in a building that egress from any part of its floor, to a public road or open space and does not involve changes in level which exceed 300 mm. It must have a floor area of at least 10 m2 and any internal side must be at least 2.5m and be accessible via two paths of travel, one from the front entrance of the building and one direct from a public place or fire-isolated passageway which leads to a public place. Refer to BCA Spec 1.8
Portable Fire Extinguisher Cabinet Tower B		0.28mW x 0.205mD x 0.56mH	So that travel distance from the entrance doorway of any sole occupancy unit or hotel room to the nearest fire extinguisher is not more than 10 m. Exact dimensions depend on manufacturer of cabinet, detailed co-ordination required with fire trade.
Fire Hose Reel and Portable Fire extinguisher Enclosure		0.9mW x 0.50mD x 2.4mH	To serve entire Tower building except for the class 3 (Hotel) portions of the building. Locate within 4m of a fire exit stair or required exit. Supplementary on floor enclosures may be required to provide complete coverage.

2.17 Tower A & Tower B - Basement Spatial Requirements

Fire Services	Riser Size	Room Size	Comments
Fire Sprinkler/Hydrant pump room. (Lower Ground) (shared/common)		10m x 5m x 2.1m H	Will house one combined sprinkler / hydrant electric pump and one combined sprinkler/hydrant diesel pump, two diesel relay pumps and 4 jockey pumps. Diesel engine flues to discharge to external space or exhaust plenum. Direct access to pump room via fire stair or open space required. Fire pump room to be located adjacent to the combined sprinkler and hydrant water tank.
Fire Sprinkler/Hydrant Split Storage Tank (secondary water supply) (Lower Ground) (shared/common)		9.5m x 9.5m x 3mH	Effective capacity to be 80,000 L, this is the minimum allowed capacity, the capacity may have to increase if sprinkler drenchers are required or the hazard classification for storage/loading dock areas increases to high hazard. We have currently allowed for a section steel tank as it is less prone to leaks when compared to an in situ concrete tank. If an in situ concrete tank was provided the spatial requirement would reduce to 7m x 7m x 3mH.

3.0 Hydraulic Services

3.1 Design Criteria

3.1.1 Standards

Ref No.	Title	Description
AS/NZS 3500.1- 2005	Plumbing and Drainage	Water Services
AS/NZS 3500.2- 2005	Plumbing and Drainage	Sanitary Plumbing and Drainage
AS/NZS 3500.3- 2005	Plumbing and Drainage	Stormwater Drainage
AS/NZS 3500.4- 2005	Plumbing and Drainage	Heated Water Services
AS 5601	Gas Installations	Gas Services
AS2441 -2005	Fire Hose Reel Installations	Fire Hose Reels

3.1.2 Guidelines

- Sydney Water- Plumbing for Retail Food Businesses
- Sydney DCP, 2012

3.1.3 Other Codes

- National Construction Code 2015, Volume 1

3.2 Scope of Works

The scope of works for the Hydraulic Services includes:

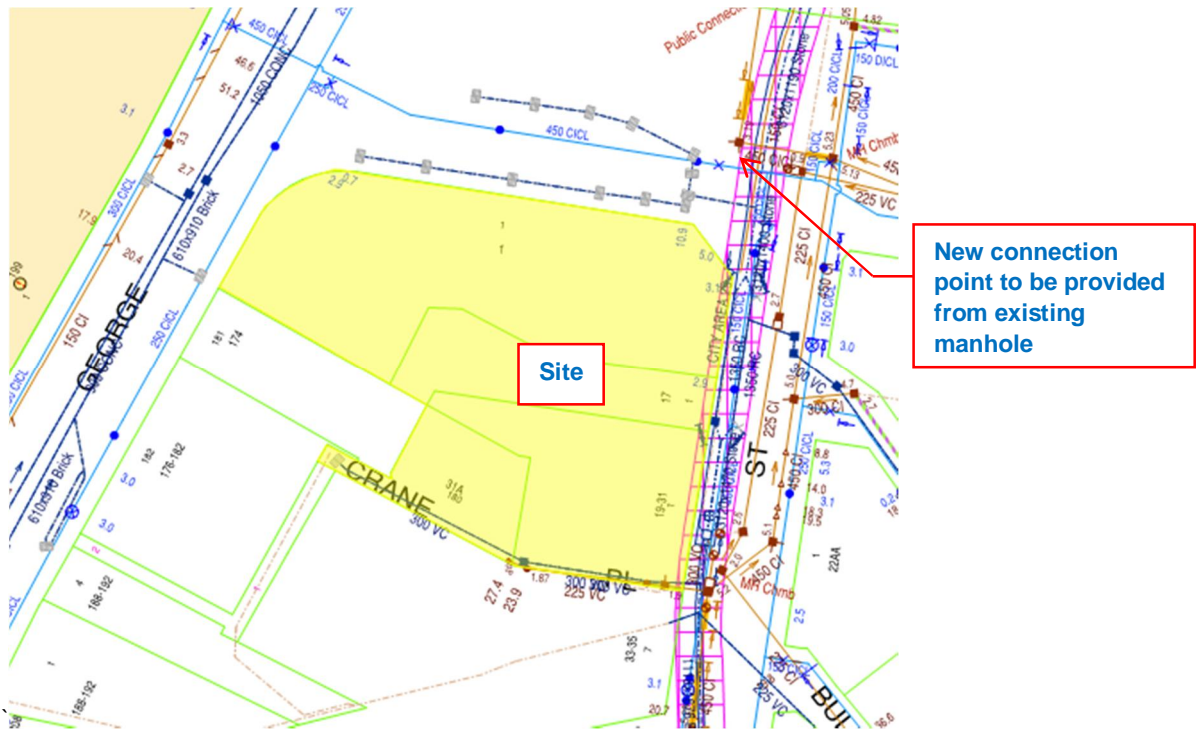
- Sanitary plumbing and sewer drainage services
- Trade waste drainage services
- Stormwater drainage services
- Sub- soil drainage services
- Potable water services
- Potable hot water services
- Re-used rainwater water services
- Gas Services
- Fire hose reel services

3.3 Sanitary Plumbing and Sewer Drainage

3.3.1 Connection Point

Based on the Sydney Water Feasibility Letter 7th June 2010, the existing sewer drainage infrastructure does not have sufficient capacity to cater for the proposed development. The advice letter indicates that a new connection point will need to be provided from the existing manhole located in Albert St.

Figure 4.3: Sewer Drainage Connection Point



3.3.2 Basement Levels

A new site wide sewer drainage system shall extend from the new authority sewer connection point, complete with boundary trap and low/ high level vents. The site wide system will provide a gravity sewer drainage point for the two towers.

Two new sewer pumping stations (one for each tower) will be provided on basement level 6, to collect all discharges unable to gravitate to the connection point.

3.3.3 Tower A - Residential

All sanitary fixtures located within the residential tower will gravitate to the side wide system, via a fully vented modified sanitary drainage system.

Each commercial/ retail space will be provided with an Ø100mm sewer drainage turn- up (located at the back of the tenancy) for future extension by the tenant. The sewer drainage turn- up will gravitate to the side wide drainage system.

3.3.4 Tower B - Hotel

All sanitary fixtures located within the residential tower will gravitate to the side wide system, via a fully vented modified sanitary drainage system.

Each commercial/ retail space will be provided with an Ø100mm sewer drainage turn- up (located at the back of the tenancy) for future extension by the tenant. The sewer drainage turn- up will gravitate to the side wide drainage system.

3.3.5 Materials

Sanitary plumbing and drainage pipe to be installed in the following materials:

- In ground pipe and fittings to be sewer grade SN8 uPVC pipe, with solvent cement joints.
- Above ground pipe and fittings to be sewer grade SN4 uPVC pipe, with solvent cement joints.
- Rising mains to be PN12 pressure grade PVC.

3.4 Trade Waste Drainage

3.4.1 Connection Point

All trade waste drainage system shall connect to the side wide sewer drainage system, as described in section 3.3.2. Basement Levels

3.4.2 Basement Levels

Coalescent plate separators shall be provided to all designated car wash bays.

3.4.3 Tower A - Residential

Each retail space (5 off) will be provided with an Ø100mm grease drainage turn- up (located at the back of the tenancy) for future extension by the tenant. The grease drainage turn- up will gravitate to the side wide drainage system, via a common above ground 5000 litre grease arrestor.

3.4.4 Tower B - Hotel

Each retail space (9 off) will be provided with an Ø100mm grease drainage turn- up (located at the back of the tenancy) for future extension by the tenant. The grease drainage turn- up will gravitate to the side wide drainage system, via a common above ground 10,000 (2 x 5000 litres) litre grease arrestor.

Greasy fixtures located in the Registered Club (Level 1) will gravitate to the side wide drainage system, via a common above ground 2,000 litre grease arrestor.

Greasy fixtures located in the Hotel Kitchens will gravitate to the side wide drainage system, via a common above ground 10,000 (2 x 5000 litres) litre grease arrestor.

3.4.5 Materials

Grease waste drainage pipe to be installed in the following materials:

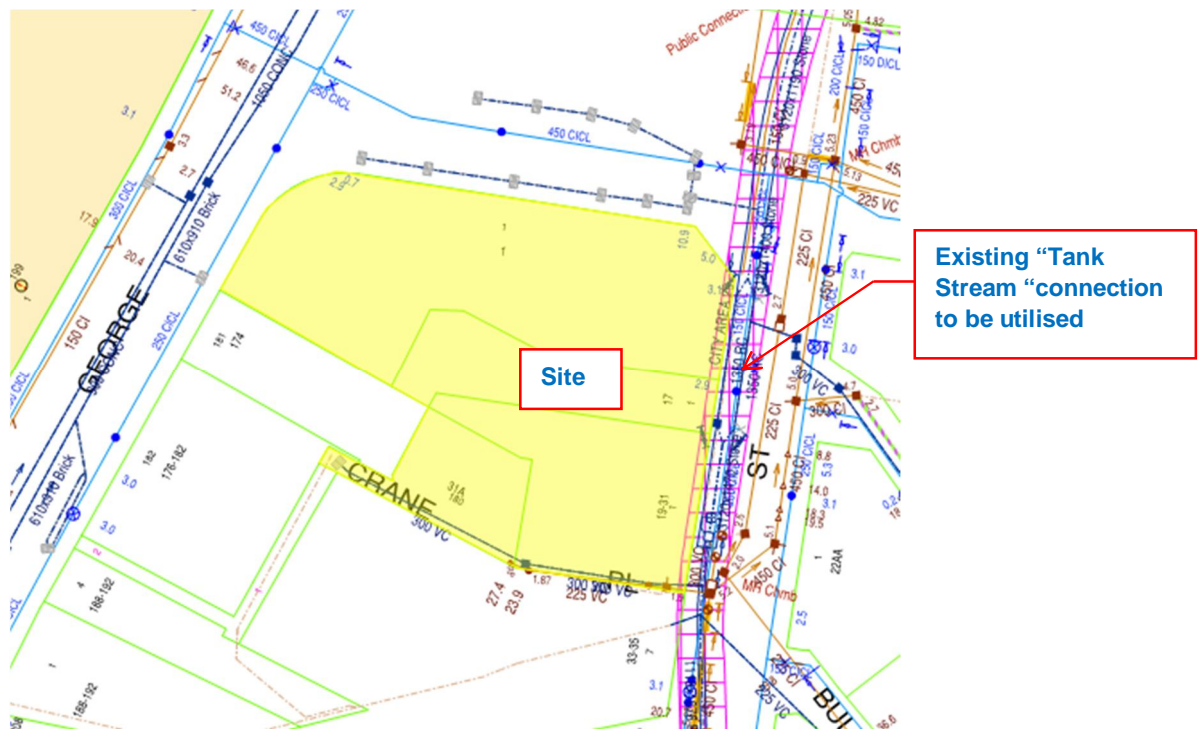
- In ground pipe and fittings to be High Density Polyethylene (HDPE) pipe, with electro fusion joints.
- Above ground pipe and fittings to be High Density Polyethylene (HDPE) pipe, with electro fusion joints.

3.5 Stormwater Drainage

3.5.1 Connection Point

Based on the Sydney Water Feasibility Letter 7th June 2010, the proposed development will not have to provide On-Site Detention (OSD). The advice letter indicates that an existing Ø300 connection point to the “Tank Stream” may be utilised.

Figure 4.5: Stormwater Drainage Connection Point



3.5.2 Basement Levels

All surface water from the basement levels areas shall discharge directly to the “Tank Stream”, via the sub-soil pumping system described in 3.6 Sub-soil Drainage.

3.5.3 Tower A - Residential

Stormwater drainage from the residential tower shall be conveyed as follows:

- Roof areas shall be conveyed via conventional downpipes, to a common 20,000 litre above ground rainwater tank, complete with first flush device. The first flush device shall be capable of capturing the first 125 litres of run-off. The tank overflow shall be directed to Sydney Water’s “Tank Stream” system, as described in 3.5.1 Connection Point
- Surface water from balconies, terraces and driveways shall discharge directly from to Sydney Water’s “Tank Stream” system, via conventional downpipes.

3.5.4 Tower B - Hotel

As per residential tower.

3.5.5 Materials

Stormwater drainage pipe to be installed in the following materials:

- Conventional downpipes and drainage to be sewer grade SN4 uPVC pipe, with solvent cement joints.
- Balcony and terrace downpipes to be sewer grade SN4 uPVC pipe, with solvent cement joints.
- Above ground pipe and fittings to be stormwater grade SN2 uPVC pipe, with solvent cement joints.

3.6 Sub-soil Drainage

3.6.1 Connection Point

All sub- soil drainage shall be conveyed to Sydney Water's "Tank Stream "system, via the sub-soil pumping system.

3.6.2 Basement Levels

Sub- soil drainage to the car parking levels shall consist of:

- Above ground car parking levels collected via elevated stormwater drainage pipework.
- Seepage water to be collected via slotted pipe located around the perimeter of the lowest basement car park.
- Surface water collected via in-ground drainage pipe.
- All sub- soil drainage water shall be treated via a gross pollutant trap, prior to discharging to the pump out pit.

3.6.3 Tower A - Residential

No sub-soil drainage is required to the residential tower.

3.6.4 Tower B - Hotel

No sub-soil drainage is required to the hotel tower.

3.6.5 Materials

Stormwater drainage pipe to be installed in the following materials:

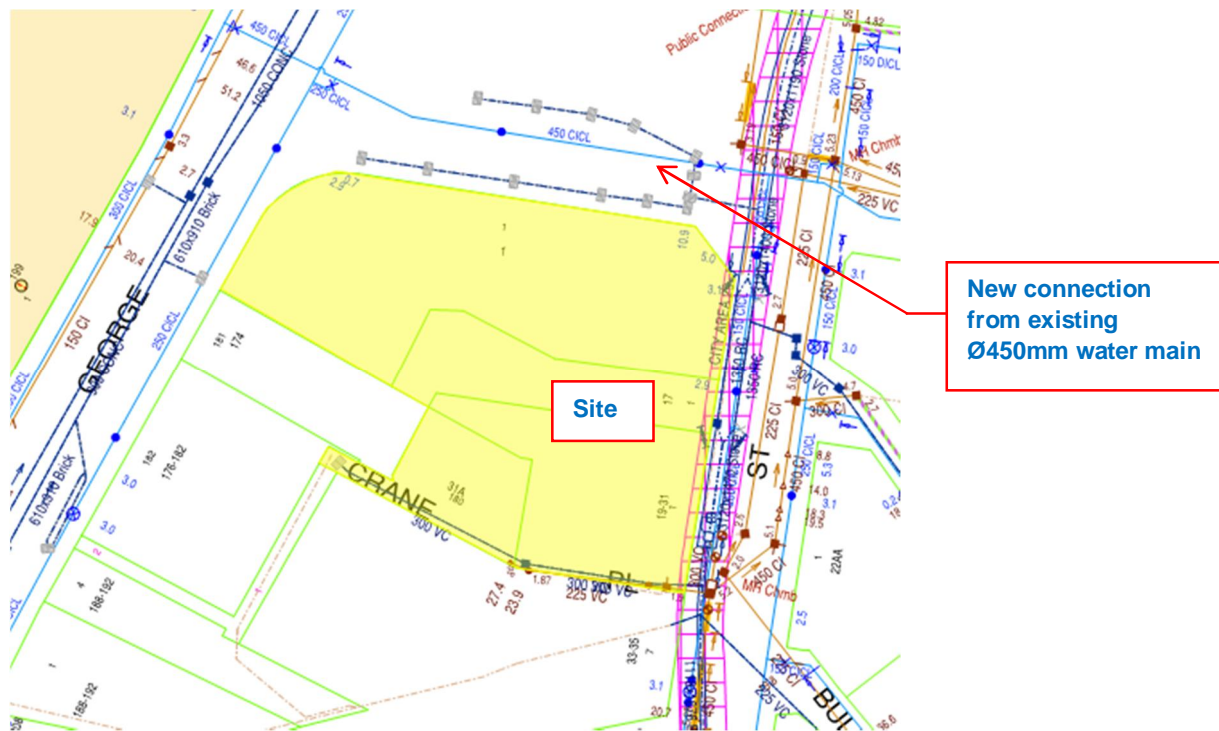
- Above ground pipe and fittings to be stormwater grade SN2 uPVC pipe, with solvent cement joints.
- Seepage water pipe to be slotted PVC "drain coil", wrapped in geo-fabric textile. Fittings to be uPVC.
- In-ground sub- soil drainage pipe $\lt; \text{Ø}225\text{mm}$ to be stormwater grade SN4 uPVC pipe, with solvent cement joints.
- In-ground sub- soil drainage pipe >math>\gt; \text{Ø}225\text{mm}</math> to be fibre reinforced concrete pipe, with rubber ring joints.

3.7 Potable Water Service

3.7.1 Connection Point

Based on the Sydney Water Feasibility Letter 7th June 2010, the existing water infrastructure does not have sufficient capacity to cater for the proposed development. The advice letter indicates that a new connection point will need to be provided from the Ø450mm water main on the southern side of Albert St.

Figure 4.7: Potable Water Connection Point



3.7.2 Metering

Potable water metering shall be provided as follows:

- Main authorities' residential meter
- Main authorities' hotel meter
- Main authorities' registered club
- Authorities' meter for each commercial tenancy
- Individual apartment sub-meters
- Residential hot water plant inlet sub- meter

3.7.3 Basement Levels

A new unassisted (subject to fire flow pressure test) site wide potable supply (metered) shall extend from the new connection point in Alfred St, complete with authorities water meter assembly and backflow prevention device. The site wide system will provide supply to the following areas:

- Tower A, Residential: domestic cold water storage tank, located on the roof top and intermediate plant room. Water is to be pumped to the intermediate plant room and then cascade up to the roof top tank from the authorities' water main, via a duplex transfer pumps.
- Tower B, Hotel- domestic cold water storage tank, located on the roof top plant room. Water is to be transferred to this tank from the authorities' water main, via a duplex transfer pump.
- All water consuming fixtures and outlets located in the basement areas.
- Commercial/ retail areas

3.7.4 Tower A - Residential

Potable water to each residential building shall be provided from the cold water storage tanks located on the intermediate and roof top plant rooms, via a triplex pressure booster pump set, and include:

- Individual apartment sub- meters located within the common corridors, in accordance with Sydney Water's metering policy.
- Zone pressure reducing valves set to 350kPa, to limit fixture outlet pressures. Preliminary calculations indicate that the sets will be required on levels 48, 37, 26 & 15.
- Apartments located below level 7 will require individual 350kPa pressure reducing valves, to limit fixture outlets pressures.

Each retail space will be provided with a capped Ø25mm potable water connection point for future extension by the tenant. The potable water service will extend from the unassisted site wide supply, complete with an authorities' sub-meter

3.7.5 Tower B - Hotel

Potable water to the hotel shall be provided from a cold water storage tank located on the roof top plant rooms, via a triplex pressure booster pump set, and include:

- Zone pressure reducing valves set to 350kPa, to limit fixture outlet pressures. Preliminary calculations indicate that the sets will be required on levels 19 & 11.

Each retail space will be provided with a capped Ø25mm potable water connection point for future extension by the tenant. The potable water service will extend from the unassisted site wide supply, complete with an authorities' sub-meter.

3.7.6 Materials

Potable water pipe to be installed in the following materials:

- In ground pipe and fittings to be polyethylene PN20 pipe with electro fusion joints.
- Reticulated above ground pipe and fittings to be copper type "B" with silver soldered joints.
- Rough- in pipe and fittings to be peroxide-cross linked Polyethylene (PE-Xa), with compression sleeve connections.

3.8 Potable Hot Water Service

3.8.1 Basement Levels

Each building shall be provided with potable hot water from a dedicated centralised gas fired system.

3.8.2 Metering

Potable hot water metering shall be provided as follows:

- Individual apartment sub-meters
- Individual sub- meters to common areas (i.e. garbage rooms)

3.8.3 Basement Levels

No potable hot water shall be provided to the basement car park and podium.

3.8.4 Tower A - Residential

Potable hot water to each residential apartment shall be provided from the dedicated centralised gas fired plant, via a flow and return loop, and include:

- Individual apartment sub- meters located within a cupboard, accessible via the common corridor
- Zone pressure reducing valves set to 350kPa, to limit fixture outlet pressures. Preliminary calculations indicate that the sets will be required on levels 48, 37, 26 & 15.
- Apartments located below level 7 will require individual 350kPa pressure reducing valves, to limit fixture outlets pressures. Individual electric hot water units, and secondary circulation pumps to recirculate hot water at the lower pressure zone
- Individual apartment thermostatic mixing valves to limit outlet temperatures to all fixtures to 50°C

3.8.5 Tower B - Hotel

Potable hot water to each hotel suite and sanitary outlets shall be provided from the dedicated centralised gas fired plant, via a flow and return loop, and include:

- Zone pressure reducing valves set to 350kPa, to limit fixture outlet pressures. Preliminary calculations indicate that the sets will be required on levels 19 & 11.

Localised hot water units will be provided to the Hotel's kitchen and back of house areas.

No potable hot water shall be provided to the retail areas.

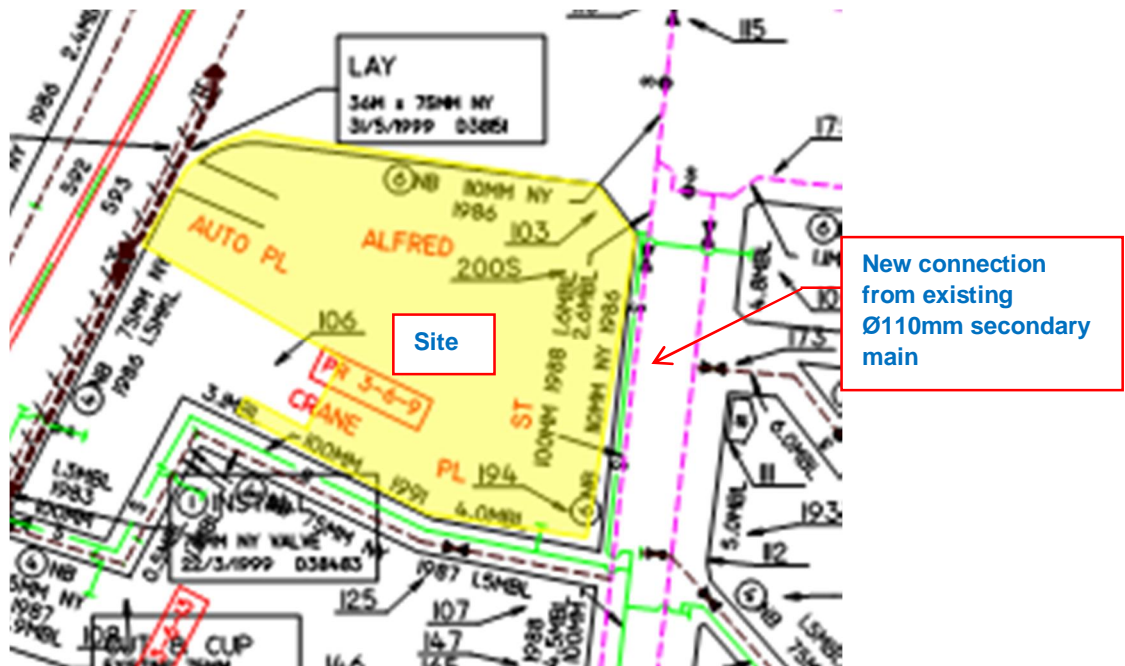
3.8.6 Materials

Potable hot water pipe to be installed in the following materials:

- Reticulated pipe and fittings to be copper type "B" with silver soldered joints, and 30mm thick insulation.
- Rough- in pipe and fittings to be peroxide-cross linked Polyethylene (PE-Xa), with compression sleeve connections.

3.9 Gas Services

Preliminary discussions obtained from Jemena indicate that the proposed development may be served from the existing Ø110mm 1500kPa secondary supply main, located in Pitt St. The suitability of the connection point will need to be confirmed with Jemena, via a formal application.



3.9.1 Basement Levels

A new site wide gas service shall extend from the authorities supply main in Pitt St, complete with authorities' gas metres. The site wide system will provide gas to the following areas:

- Each residential apartment
- Hot water units
- Hotel areas
- Registered Club
- Common areas.
- Retail areas

3.9.2 Metering

Authorities' gas meters shall be provided, for the following:

- Centralised hot water plants
- Each residential apartment
- Hotel
- Registered Club
- Each commercial tenancy (2 off)
- Common areas (i.e. BBQ facilities)

3.9.3 Tower A - Residential

A gas supply, complete with authorities meter, located in the common corridor is to be provided to each apartment to serve the following appliances:

- Gas cook top

A capped gas supply capable of providing 1000 mJ/hr is to be provided to each retail tenant, from the authorities' gas meter. The tenant is to be responsible for extending the capped connection, as part of their fit-out works

3.9.4 Tower B - Hotel

A metered gas supply shall be provided to all gas consuming appliances located within the Hotel.

A metered gas supply shall be provided to all gas consuming appliances located within the Registered Club.

A capped gas supply capable of providing 1000 mJ/hr is to be provided to each retail tenant, from the authorities' gas meter. The tenant is to be responsible for extending the capped connection, as part of their fit-out works

3.9.5 Materials

Gas pipe to be installed in the following materials:

- In ground pipe and fittings to be polyethylene PN20 pipe with electro fusion joints.
- Reticulated above ground pipe and fittings to be copper type "B" with silver soldered joints.
- Rough- in pipe and fittings to be copper type "B" with silver soldered joints.

3.10 Tower A – Residential

3.10.1 Residential Spatial Requirements

Hydraulic Service	Riser Size (m2)	Plantroom Size	Comment
Intermediate level plant room/s			
Hydraulic Plantroom - Domestic cold water storage tank pumps and hot water units etc.		10.0 x 6.0 x 5.5 high	Locate on Level 35
Pressure reduction/ reheat station x 4		2.5 x 2.5 x 2.4m high	Locate in close proximity to main riser, on the following floors: <ul style="list-style-type: none"> - Level 15 - Level 26 - Level 37 - Level 48
Roof level plant room			
Hydraulic Plantroom - Domestic cold water storage tank pumps and hot water units etc.		10.0 x 6.0 x 3.5 high	12kL effective capacity storage tank based on 4 hour storage.
General – All floors			
Main Hydraulic Riser	2000 x 750		Main risers, cold water and gas meters etc. Locate in common corridor
Hydraulic Riser 1 – Within Apartments	750 x 350 or 500 x 450		Locate adjacent to wet areas
Hydraulic Riser- Hot Water Meters	500 x 450		Locate in common corridor
Downpipes	450 x 250		Location to be confirmed

3.10.2 Residential Basement Spatial Requirements

Hydraulic Service	Riser Size (m2)	Plantroom Size	Comment
Basement 5			
Sub soil pump out pit (Shared)		10.0 x 10.0m allowance	Allowance for pump-out pit and pollutant trap, located below ground
Sewer pumping station (1 per Tower)		1 off. x 3.0 x 3.0 x 2.4m high.	access room directly over Sealed and mechanically ventilated
Basement 1			
Water pump room (Tower A)		3.5 x 5.0 x 2.4m high	Preferably in close proximity to cold water meters.
Tower A grease arrestor room		5.0 x 5.0 x 3.1m high	Double height space. Sealed and mechanically ventilation
Tower A- Rainwater Tank & Filtrations		5.0 x 5.0 x 3.1m high	Locate close to Pitt St Boundary
Ground/ Mezzanine floor			
Tower A Water meter assembly		2.0 x 1.0 x 1.8m high	must be within 1 meter of boundary

3.11 Tower B – Hotel

3.11.1 Hotel Spatial Requirements

Hydraulic Service	Riser Size (m2)	Plantroom Size	Comment
Intermediate level plant room/s			
Pressure reduction/ reheat station x 2		2.5 x 2.5 x 2.4m high	Locate in close proximity to main riser, on the following floors: <ul style="list-style-type: none"> - Level 11 - Level 19
Roof level plant room			
Hydraulic plantroom - Domestic cold water storage tank pumps and hot water units etc.		10.0 x 7.0 x 3.5 high	35kL effective capacity storage tank based on 4 hour storage.
General – All floors			
Hydraulic Risers	750 x 350		Locate adjacent to wet areas
Main Hydraulic Riser	1000 x 750		Main risers, etc.
Downpipes	450 x 250		Location to be confirmed

3.11.2 Hotel Basement Spatial Requirements

Hydraulic Service	Riser Size (m2)	Plantroom Size	Comment
Basement 5			
Sub soil pump out pit (Shared)		10.0 x 10.0m allowance	Allowance for pump-out pit and pollutant trap, located below ground
Sewer pumping station (1 per Tower)		1 off. x 3.0 x 3.0 x 2.4m high.	access room directly over Sealed and mechanically ventilated
Basement 1			
Water pump room (Tower B)		3.5 x 5.0 x 2.4m high	Preferably in close proximity to cold water meters.
Tower B Grease Arrestor Room		9.0 x 10.0 x 3.1m high	Double height space. Sealed and mechanically ventilated
Tower B- Rainwater Tank & Filtrations		5.0 x 5.0 x 3.1m high	Locate close to Pitt St Boundary
Ground/ Mezzanine floor			
Natural gas boundary regulator/ meter assembly (Allowance for Cogeneration Plant)		6.5 x 9.0 x 2.4m high	Must be located at ground floor (street Level), adjacent to Pitt Street frontage.
Tower B Water meter assembly		2.0 x 1.0 x 1.8m high	must be within 1 meter of boundary

4.0 Lift Services

4.1 Methodology

4.1.1 Tower A – Residential

The Residential Tower is split into two Lift Cores and will be provided with a high level of Lift service.

It is intended each Lift Group shall cater for material movement and be provided with Basement Level access to support new and vacating tenants and Car Park access.

4.1.1.1 Passenger Movement

Lifts shall support all patrons throughout Apartment Floors and Basement Floor Levels.

Public Lifts shall support movement of patrons to the Ballroom and Roof Restaurant and Bar Floor Levels.

4.1.1.2 Material Movement

Passenger Lifts will also support material movement from Basement Floor Levels and the Loading Dock located on Basement 1.

Movement of material supporting new and vacating tenants is expected to be managed by an on-site facilities management and be performed during non-peak periods.

Lift car finishes would be hard wearing and durable considering movement of materials, minimising potential damage. Lift cars would be appropriately protected during movement of bulky materials to minimise potential damage.

4.1.1.3 Car Park and End of Trip

Access to the Basement Car Park and End of Trip facilities for tenants is provided by each Lift. It is expected all Lifts will serve all Floor Levels.

4.1.2 Tower B – Hotel

The Hotel will be provided with a high level of Lift service.

4.1.2.1 Passenger Movement

Guest Lifts shall support movement of Hotel patrons throughout Apartment Floors and Function spaces including Ballroom and Pool Floor Levels.

Public Lifts shall support movement of patrons to the Ballroom and Roof Restaurant and Bar Floor Levels.

4.1.2.2 Ballroom Access

At completion of Ballroom functions Lift demand will result in lobby congestion. It is expected Hotel Guest Lifts and Public Lifts will support the timely movement of patrons. On-site facilities management may be required to assist during this period of peak demand as Lift services to upper floor levels will be limited during this peak period.

4.1.2.3 Material Movement

Passenger/Goods Lifts will support Back of House functions to support the Hotel, Restaurant and Bar Floor Levels.

Lifts are intended to cater for:

- Staff
- Material Movement
- Food & Beverage stock supply
- Linen
- Waste

Lifts shall be provided with Loading Dock access from Basement Level 1.

Lift car finishes would be hard wearing and durable considering movement of materials, minimising potential damage. Lift cars would be appropriately protected during movement of bulky materials.

4.1.2.4 Car Park & VIP access

VIP and Hotel Guest Parking in the Basement shall be provided access via the Public Lifts to the Hotel Lobby.

VIP Lift use shall be controlled by a priority lift service to provide exclusive use as required.

4.1.3 Registered Club

The Hotel will be provided with a high level of Lift service.

4.1.3.1 Passenger Movement

A Lift shall primarily support movement of those with a disability. It is intended open stair access will be provided to cater for general population movement between both floor Levels

This Lift shall be provided with access from the Street Level at Ground Floor.

4.1.3.2 Material Movement

A dedicated Goods Lift is to be provided and shall support all Back of House functions to support the Club.

This Lift is intended to cater for:

- Staff
- Material Movement
- Food & Beverage stock supply
- Linen
- Waste

This Lift shall be provided with Loading Dock access from Basement Level 1.

Lift car finishes would be hard wearing and durable considering movement of materials, minimising potential damage. Lift cars would be appropriately protected during movement of bulky materials.

4.2 Compliance with Regulations and Standards

All work is to conform to AS1735. The whole of the installation shall also comply with all the relevant local Statutory Authority's requirements.

An abbreviated list of codes includes;

- SAA Lift Code AS1735.1 (incorporating Amendment 1)
- SAA Lift Code AS1735.12 (facilities for persons with a disability)
- The Building Code of Australia (BCA)
- Workplace Health and Safety Act, Regulations or codes pursuant to NSW.
- AS/NZS 3000 – SAA Wiring Rules
- AS/NZS 4431 – Guidelines for Safe Working on New Lift Installations.
- All other referenced standards/codes contained in the above.

The Lift Contractor shall be required to perform all design verification at commissioning of each Lift.

4.3 Spatial Requirements

4.3.1 Tower A - Residential

Lifts	Parameter	Size	Comment
Residential			
West Core Passenger Lifts	Quantity: Common Lift Shaft Size Pit Depth Overrun Machine Room Size Machine Room Height	3x Gearless Traction lifts 7800mm Wide x 2900mm Deep 3000mm (min) 5500mm (min) 7800mm Wide x 5500mm Deep (nominal) 3000mm	Floors served: Basement, Ground, Level , 1-34
East Core Passenger Lifts	Quantity: Common Lift Shaft Size Pit Depth Overrun Machine Room Size Machine Room Height	3x Gearless Traction lifts 7800mm Wide x 2900mm Deep 4100mm (min)** 7500mm (min) 7800mm Wide x 5500mm Deep (nominal) 3900mm	Floors served: Basement, Ground, Level , 1-56

** Emergency Lift Pit Access at Pit Floor Level is required.

4.3.2 Tower B – Hotel and Registered Club

Lifts	Parameter	Size	Comment
Hotel			
Guest Lifts	Quantity: Common Lift Shaft Size Pit Depth Overrun Machine Room	3x Gearless Traction lifts 8600mm Wide x 2600mm Deep 2500mm (min) 5000mm (min) N/A	Floors served: Basement, Ground, Level , 1-22
BoH Lifts	Quantity: Common Lift Shaft Size Pit Depth Overrun Machine Room	3x Gearless Traction lifts 8600mm Wide x 2600mm Deep 2500mm (min) 5000mm (min) N/A	Floors served: Basement, Ground, Level , 1-24
Public Lifts (Lobby, Ballroom, Roof Bar & Restaurant)	Quantity: Common Lift Shaft Size Pit Depth Overrun Machine Room	2x Gearless Traction lifts 5600mm Wide x 2600mm Deep 2500mm (min) 5000mm (min) N/A	Floors served: Basement, Ground, Level , 2, 23, 24
Public Lifts (Lobby & Ballroom)	Quantity: Common Lift Shaft Size Pit Depth Overrun Machine Room	2x Gearless Traction lifts 5600mm Wide x 2600mm Deep 2500mm (min) 5000mm (min) N/A	Floors served: Basement, Ground, Level 2
Registered Club			
Public Lift	Quantity: Common Lift Shaft Size Pit Depth Overrun Machine Room	1x Gearless Traction lifts 2500mm Wide x 2600mm Deep 1800mm (min) 4200mm (min) N/A	Floors served: Basement, Ground, Level 1
Goods Lift	Quantity: Common Lift Shaft Size Pit Depth Overrun Machine Room	1x Gearless Traction lifts 2980mm Wide x 2600mm Deep 1800mm (min) 4200mm (min) N/A	Floors served: Basement, Ground, Level 1